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Separation of oil products from aqueous emulsion sewage using a modified nylon–polyaniline membrane

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Abstract

© 2016, Pleiades Publishing, Ltd.Nylon–polyaniline (nylon–PANI) membranes with different polymerization times have been prepared, and the surface of modified membranes has been investigated. The permeateflux of the initial and modified membranes has been determined with distilled water and aqueous emulsion sewage containing oil products. The specific permeability of the membranes decreases with the increasing time of membrane treatment with ammonium persulfate. The efficiency of oil separation from Inkam-1 emulsion by a nylon membrane was much lower than that by the modified nylon–PANI membranes. The highest oil separation efficiency was observed in a nylon–PANI15 membrane. In general, a nylon–PANI membrane much worse rejected oil products from an Inkam-1 emulsion than from aqueous emulsion sewage. The particle size of the dispersed phase of emulsions has been studied before and after purification by membranes. A membrane with high specific permittivity and separation efficiency can be chosen by varying the polymerization time of nylon–PANI membranes depending on the particle size of oil products in the emulsion.

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Keywords

emulsion, membranes, nylon, oil products, polyaniline